REMARKS

In the November 26, 2007 Office Action, all of the claims stand rejected in view of prior art. Also, claims 4, 6, 7, 9, 11, 13, 14 and 16 were rejected as being indefinite. No other objections or rejections were made in the Office Action.

Status of Claims and Amendments

In response to the November 26, 2007 Office Action, Applicant has amended claims 1, 2, 4, 6, 7, 9, 11, 13, 14 and 16 as indicated above. Thus, claims 1-16 are pending, with claims 1 and 2 being the only independent claims. Reexamination and reconsideration of the pending claims are respectfully requested in view of above amendments and the following comments.

Claim Rejections - 35 U.S.C. §112

In paragraphs 2 and 3 of the Office Action, claims 4, 6, 7, 9, 11, 13, 14 and 16 were rejected under 35 U.S.C. §112, second paragraph. Claims 4, 7, 11 and 14 are rejected because the terms "small" and "large" are allegedly indefinite in these claims. In response, Applicant has amended these claims to remove the alleged indefinite terms and clarified that widths are larger than or smaller than other widths to overcome this rejection. Claims 6, 9, 13 and 16 are rejected because the terms "wide" and "narrow" are allegedly indefinite in these claims. In response, Applicant has amended these claims to remove the alleged indefinite terms and clarified that regions are wider or narrower than other regions to overcome this rejection. Applicant believes that the claims now comply with 35 U.S.C. §112, second paragraph. Accordingly, withdrawal of these rejections is respectfully requested.

Rejections - 35 U.S.C. § 103

In paragraphs 5-12 of the Office Action, claims 1-16 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 2,561,280 (Kampf) in view of U.S. Patent No. 5,165,878 (Inagaki et al.). In response, Applicant has amended independent claims 1 and 2 to clarify these claims. This rejection is respectfully traversed, especially in view of the amendments to claims 1 and 2.

Claims 1 and 2 now clearly require a cylinder having an annular cylinder chamber formed as a space between a cylindrical inner periphery and a cylindrical outer periphery of the annular cylinder chamber; an annular piston disposed in the cylinder chamber to be eccentric to the cylinder, the annular piston dividing the cylinder chamber into an outer working chamber and an inner working chamber, the annular piston having a cylindrical inner piston surface facing the inner periphery of the cylinder chamber and a cylindrical outer piston surface facing the outer periphery of the cylinder chamber; and a blade arranged in the cylinder chamber, the blade extending in a radius direction from the outer periphery to the inner periphery of the cylinder chamber to divide each of the outer and inner working chambers into a high pressure region and a low pressure region. In other words, the claims are even more clearly directed to a rotary machine having cylindrical piston/cylinder (i.e. not a scroll-type fluid machine).

Claim 1 has been further amended to clarify that the cylinder chamber has a radial width measured between the inner and outer peripheries of the cylinder chamber that is varied about a circumference of the cylinder chamber such that a gap between the inner periphery of the cylinder chamber and the inner piston surface of the piston and a gap between the outer periphery of the cylinder chamber and the outer piston surface of the piston are kept to a predetermined value during the rotations in claim 1. **Claim 2** has been further amended to clarify that the piston has a radial width measured between the inner and outer piston surfaces that is varied about a circumference of the piston such that a gap between the inner periphery of the cylinder chamber and the inner piston surface of the piston and a gap between the outer periphery of the cylinder chamber and the outer piston surface of the piston are kept to a predetermined value during the rotations. Clearly these arrangements set forth in independent claims 1 and 2 are ***not*** disclosed or suggested by the Kampf patent and/or the Inagaki et al. patent, whether taken alone or in combination.

With the claimed arrangements of claims 1 and 2 an annular cylinder chamber (50) is divided into an outer compressor chamber (51) and an inner compressor chamber (52) by an annular piston (22). The fluid machine is arranged such that gas load varies at the outer compressor chamber (51) and the inner compressor chamber (52) during one relative rotation of a cylinder (21) and the annular piston (22). As a result, in conventional piston /cylinder compressors, a gap between the cylinder and the annular piston changes during the rotation,

and therefore gas leaks. The arrangements of claims 1 and 2 prevent the gap from changing and the gas from leaking, by changing at least one of a radial width T1 of the cylinder chamber (50) and a radial width T2 of the annular piston (22) on the periphery.

While the Kampf patent has a cylinder, an annular piston, an inner chamber and an outer chamber, a width of the cylinder chamber and a width of a piston are constant, which is typical with such types of compressors. Thus, the Kampf patent fails to disclose or suggest ***a varying radial width of a cylinder chamber or piston, as set forth in claims 1 and 2, respectively***, as acknowledged in the Office Action.

The Office Action then relies on the Inagaki et al. patent, and alleges that such an arrangement is obvious based on column 1, lines 60-65 of this reference. However, the Inagaki et al. patent is directed to a scroll-type compressor that utilizes a pair of ***spiral*** wraps with a ***spiral*** chamber therebetween. In other words, the Inagaki et al. patent does not disclose or suggest an annular piston or annular cylinder chamber whatsoever, and thus, cannot disclose, suggest or teach one of ordinary skill in the art to vary the width of an annular piston and/or cylinder chamber, as set forth in claims 1 and 2 whatsoever. Column 1 lines 60-65 of this reference merely indicate that efficiency is decreased if the precision of the groove is low. This section is discussing the groove in which balls are received, and is totally unrelated to spiral wrap radial width and spiral chamber radial width. Thus, this excerpt from the Inagaki et al. patent does not disclose, teach or suggest varying a radial width of one of the spiral wraps or the spiral chamber in the scroll compressor, but rather makes no mention whatsoever of varying radial width of any of these parts. Accordingly, even if combined as suggested in the Office Action, this hypothetical combination of references would not include all of the features of independent claims 1 and 2 (i.e., since neither reference discloses varying the radial width of the cylinder chamber and/or piston as set forth in these claims).

Moreover, in the scroll compressor of the Inagaki et al. patent, the chamber around the blade 42 does not make up a compressor chamber, and is not a space where gas load is changed during one rotation of a scroll. Thus, the device of this reference does not even have the same problem as piston/cylinder compressors. Thus, one of ordinary skill in the art would not combine these references as suggested in the Office Action, and the hypothetical combination suggested by the Office Action would not result in the unique arrangement of

independent claims 1 and 2 (i.e., it does not realize surely preventing the gas leak like the claimed arrangements).

It is well settled in U.S. patent law that the mere fact that the prior art can be modified does ***not*** make the modification obvious, unless the prior art provides an ***apparent reason*** for the desirability of the modification. In this case, there is no reason for one of ordinary skill in the art to attempt to combine the Inagaki et al. patent with the Kampf patent as asserted in the Office Action, and even if combined, this combination does not disclose or suggest all of the features of independent claims 1 and 2, as explained above. Accordingly, withdrawal of this rejection of independent claims 1 and 2 as well as their dependent claims 3-16 are respectively requested.

Prior Art Citation

In the Office Action, additional prior art references were made of record. Applicant believes that these references do not render the claimed invention obvious.

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In view of the foregoing amendment and comments, Applicant respectfully asserts that claims 1-16 are now in condition for allowance. Reexamination and reconsideration of the pending claims are respectfully requested.

Respectfully submitted,

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